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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/943,535	08/30/2001	Graham Andrew Cairns	YAMAP0777US	9423

7590 09/01/2005

EXAMINER
LAO, LUN YI

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ART UNIT	PAPER NUMBER
2673	

DATE MAILED: 09/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/943,535	CAIRNS ET AL.	
	Examiner	Art Unit	
	Lao Y. Lun	2677	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) *17-40* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 5, 9, 10 and 12-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Nishioka et al(5,390,293).

As to claims 1, 2, 5, 9, 10 and 12-14, Nishioka et al teach a driving arrangement for an active matrix liquid crystal display comprising: (a) a multi-format digital data driver arranged to operate in a plurality of different display modes(4096 color mode(N+M mode) or 512color mode(N mode))(see figures 1, 4, 6 -15, 17 and 19-21; abstract; column 2, lines 12-47; column 3, lines 1-39; column 4, lines 21-64; column 5, lines 1-23; column 7, lines 43-51; column 8, lines 29-39; column 9, lines 1-30; column 10, lines 5-47; column 16, lines 1-35; column 17, lines 63-68 and column 18, lines 1-14), to receive digital input data in a plurality of different color formats(3bits, 60 HZ or 4 bits, 80HZ), and to drive data lines of the liquid crystal display(51) so as to cause an image to be displayed by the display corresponding to the input data(40-43, 24); and

(b) data analysis means(44) arranged to receive the digital input data(40-43, 24), to determine the format of the input data, and to control the data driver(44, 48) to operate in the display mode corresponding to the determined color format of the input data(see figures 1, 6-15, 19-22; abstract; column 9, lines 1-30; column12, lines 30-67; column 13. lines 3-68 and columns 14-15). Nishioka et al teach a data driver(44,48) consuming less power in low resolution display mode(512 or N color mode) compared to high resolution display mode(4096 or (N+M) color mode)(see figures 1, 4, 6 -15, 17 and 19-21; abstract; column 4, lines 60-64; column 5, lines 13-23; column 8, lines 28-39; column 10, lines 5-47 and column 16, lines 1-10).

As to claim 2, Nishioka et al teach the data analysis means forms part of the data driver(44, 48)(see figure 6).

As to claim 5, Nishioka et al teach the analysis means(44) updating the mode of the data driver at the end of each frame(see figures1, 6-8; column 14, lines 12-68 and column 15, lines 1-9).

As to claim 10, Nishioka et al teach a format control signal(24) having high(4096) and low resolution(512) control signals(see figures 1, 5-7 and column 12, lines 8-12).

As to claim 12, Nishioka et al teach data driver(44, 48) having a plurality of digital data input channels(40-43) arranged to received the digital input data(se figure 6).

As to claim 13, Nishiko et al teach data analysis means(44) having a number of storage registers(60, 62, 66)(see figures 6-7 and column 13, lines 45-63).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nashioka et al in view of Daher(5,327,254).

Nashioka fail to disclose a 1-bit overlay mode.

Daher teaches a display device having a on-bit overlay mode(see column 11, lines 52-60 and column 12, lines 1-6). It would have been obvious to have modified Nashioka et al with the teaching of Daher, so as to efficiently provide a high quality picture.

5. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nashioka et al in view of Koyama et al(5,767,832).

Nashioka et al fails to disclose a data driver for providing a lower refresh rate if the input data has remained unchanged.

Koyama et al teach an LCD display driving circuit comprising data driver for outputting a lower refresh rate if the input data has remained unchanged(see figures 1-2; abstract; column 2, lines 3-10 and column 6, lines 53-59). It would have been obvious to have modified Nashioka et al with the teaching of Koyama et al, so as to save power(see abstract and column 1, lines 51-61).

As to claim 8, Koyama teach an LCD display driving circuit having data analysis means having an OR gate(see figure 2 and column 5, lines 5-31).

6. Claim 11 is rejected under 35 U.S.C. 102(e) as being anticipated by Nakagiri(6,396,465) in view of Cairns et al(EP 0,930,716).

Nakagiri fails to disclose a variable bit digital to analog converter.

Cairns teach an LCD display driver having a variable bit digital to analog converter(see figures 5, 7, 13-14; column 6, lines 39-58; column 7, lines 1-35 ; column 13, lines 28-58 and column 14, lines 1-8). It would have been obvious to have modified Nakagiri with the teaching of Cairns, so as to provide a more efficient digital to analog converter for performing gamma correction(see column 4, lines 9-39 and column 14, lines 3-8).

7. Claims 15-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Nishioka et al(5,390,293) in view of Misawa et al(5,250,931).

Nishioka et al fail to disclose the thin film transistors of the active matrix arranged in the same substrate.

Misawa et al teach an LCD display having driving means(12, 21) and the thin film transistors(29) of the active matrix arranged in the same substrate(11)(see figure 1; abstract and column 4, lines 43-68). It would have been obvious to have modified Nishioka et al with the teaching of Misawa et al, so as to reduce the number of connecting wires, ensure more stable connections, minimize space and the number of parts in providing the display control circuitry.

Response to Arguments

8. Applicant's arguments filed June 27, 2005 have been fully considered but they are not persuasive.

Applicant argues that Nishioka et al do not teach a display mode based on factors which do not include the format of the input data on page 9. The examiner disagrees with that since Nishioka et al teach a display mode(4096(or 4bit), 80HZ mode or 512(or 3bit), 60HZ mode) based on the determined color format of the input data(25(40-43)(determined frequency), 25(determined number of color(4096 or 512))(see figures 1, 6-8; column 3, lines 29-38; column 8, lines 40-58; column 9, lines 21-25; column 14, lines 32-45 and column 15, lines 2-39).

Applicant argues that Nishioka et al do not teach a data analysis means for determining the color format of the input data and controls the data to operate in the display mode corresponding to the determined color format of the input data on pages 9-10. The examiner disagrees with that since that Nishioka et al teach a data analysis means(44) for determining the color format(4096 or 512) of the input data and controls the data to operate in the display mode(4096(or 4bit), 80HZ mode or 512(or 3bit), 60HZ mode) corresponding to the determined color format of the input data(4096 or 512)(see figures 1, 6-8; column 3, lines 29-38; column 8, lines 40-58; column 9, lines 21-25; column 13, lines 46-68; column 14 and column 15, lines 1-39).

Applicant argues that Nishioka et al do not teach a data driver to consume less power in low resolution display modes and more power in high resolution on page 10.

The examiner disagrees with that since Nishioka et al teach a data driver to consume less power in low resolution display modes(512 color mode) and more power in high resolution(4096 color mode)(see figures 1, 4 and column 10, lines 5-47).

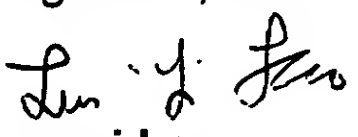
Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lun-yi Lao whose telephone number is 571-272-7671. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

August 29, 2005



Lun-yi Lao
Primary Examiner